

CLAIMS

What is claimed is:

- 1 1. A method, comprising:
2 periodically capturing data from a tunable optical device during operation of
3 the tunable optical device; and
4 streaming the data from the tunable optical device.
- 1 2. The method of claim 1 wherein streaming the data comprises outputting a
2 plurality of data frames from a serial interface coupled to the tunable optical device,
3 wherein each data frame of the plurality of data frames includes data captured from
4 the tunable optical device at a particular time.
- 1 3. The method of claim 2, further comprising formatting the data into the plurality
2 of data frames.
- 1 4. The method of claim 2 wherein each data frame includes a frame start code,
2 an index number, a standard data section, and a device specific data section.
- 1 5. The method of claim 4 wherein each data frame includes a checksum.
- 1 6. The method of claim 1, further comprising buffering the captured data at the
2 tunable optical device prior to streaming the data from the tunable optical device.

1 7. The method of claim 1, further comprising receiving a user injected signal at
2 the tunable optical device to artificially change an operating factor of the tunable
3 optical device.

1 8. The method of claim 7, further comprising routing the user injected signal to a
2 controller of the tunable optical device.

1 9. The method of claim 1, further comprising receiving the data at a data
2 acquisition unit communicatively coupled to the tunable device.

1 10. The method of claim 9, further comprising storing the data at a storage device
2 communicatively coupled to the data acquisition unit.

1 11. An apparatus, comprising:
2 a tunable optical device; and
3 a controller coupled to the tunable optical device, the controller including a
4 serial interface coupled to a processor, the controller to capture a plurality of sets of
5 real-time data from the tunable optical device during operation of the tunable optical
6 device, the controller to stream the plurality of sets of real-time data from the tunable
7 optical device.

1 12. The apparatus of claim 11 wherein each set of the plurality of sets real-time
2 data includes a plurality of data points regarding the tunable optical device captured
3 at a unique time.

1 13. The apparatus of claim 11 wherein the serial interface comprises one of an
2 SPI (Serial Peripheral Interface), a UART (Universal Asynchronous
3 Receiver/Transmitter), an I2C (Inter-Integrated Circuit), a USB (Universal Serial Bus)
4 port, or a SCSI (Small Computer System Interface).

1 14. The apparatus of claim 11 wherein the serial interface is coupled to a select
2 pin, a data clock pin, and a data pin of the controller, the select pin to signal a device
3 communicatively coupled to the serial interface to prepare to receive the plurality of
4 sets of real-time data, the data clock pin to indicate the data rate that the plurality of
5 sets of real-time data are to be outputted from the serial interface, the data pin to
6 output the plurality of sets of real-time data from the tunable optical device.

1 15. The apparatus of claim 11, further comprising a buffer coupled to the
2 controller to temporarily store at least a portion of the plurality of sets of real-time
3 data.

1 16. The apparatus of claim 11, further comprising an analog-to-digital (ADC)
2 coupled to the controller to convert at least a portion of the plurality of sets of real-
3 time data from analog to digital.

1 17. The apparatus of claim 11 wherein the plurality of sets of real-time data are
2 captured at a periodic rate based on a processing speed of the processor.

1 18. A system, comprising:
2 a tunable optical device; and
3 a controller coupled to the tunable optical device, the controller comprising:
4 a processor; and
5 at least one flash device coupled to the processor, the at least one
6 flash device including firmware instructions which when executed by the
7 processor perform operations comprising:
8 capturing a first plurality of data points from the tunable optical
9 device at a first time; and
10 streaming the first plurality of data points from the tunable
11 optical device.

1 19. The system of claim 18 wherein execution of the firmware instructions further
2 perform operations comprising forming the first plurality of data points into a first
3 data frame.

1 20. The system of claim 19 wherein execution of the firmware instructions further
2 perform operations comprising:
3 capturing a second plurality of data points from the tunable optical device at a
4 second time;

5 forming the second plurality of data points into a second data frame; and
6 streaming the second plurality of data points from the tunable optical device.

1 21. A method, comprising:
2 receiving a data stream from a tunable optical device at a data acquisition
3 unit, wherein the data stream includes data periodically captured from the tunable
4 optical device; and
5 storing the data in a storage device communicatively coupled to the data
6 acquisition unit.

1 22. The method of claim 21, further comprising receiving a select signal at the
2 data acquisition unit to indicate to the data acquisition unit to prepare to receive the
3 data stream.

1 23. The method of claim 21 wherein receiving the data stream comprises
2 receiving a plurality of data frames at a serial interface coupled to the data
3 acquisition unit, wherein each data frame of the plurality of data frames includes a
4 plurality of data points captured from the tunable optical device at a particular time.

1 24. The method of claim 23 wherein each data frame of the plurality of data
2 frames includes a frame start code, an index number, a standard data section, and a
3 device specific data section.

1 25. The method of claim 24, further comprising synchronizing the receiving of the
2 plurality of data frames through the index number of at least one data frame of the
3 plurality of data frames.

1 26. The method of claim 21, further comprising sending a user injected signal
2 from the data acquisition unit to the tunable optical device, wherein the user injected
3 signal to artificially change an operating factor of the tunable optical device.

1 27. An article of manufacture comprising:
2 a machine-readable medium including a plurality of instructions which when
3 executed perform operations comprising:
4 capturing real-time data from a tunable optical device during operation of the
5 tunable optical device;
6 forming a plurality of data frames from the real-time data, each data frame of
7 the plurality of data frames including at least one data point captured from the
8 tunable optical device at a particular time; and
9 streaming the plurality of data frames from the tunable optical device.

1 28. The article of manufacture of claim 27 wherein streaming the plurality of data
2 frames comprises sending the plurality of data frames from a serial interface coupled
3 to the tunable optical device.

1 29. The article of manufacture of claim 28 wherein execution of the plurality of
2 instructions further perform operations comprising taking the at least one data point
3 from a buffer coupled to the serial interface to form a data frame of the plurality of
4 data frames.

1 30. The article of manufacture of claim 28 wherein execution of the plurality of
2 instructions further perform operations comprising sending a select signal to a select
3 line of the serial interface to signal a device communicatively coupled to the tunable
4 optical device to prepare to receive streaming of the plurality of data frames.